The second neighboring Micra transcatheter pacing system implantation due to early battery depletion

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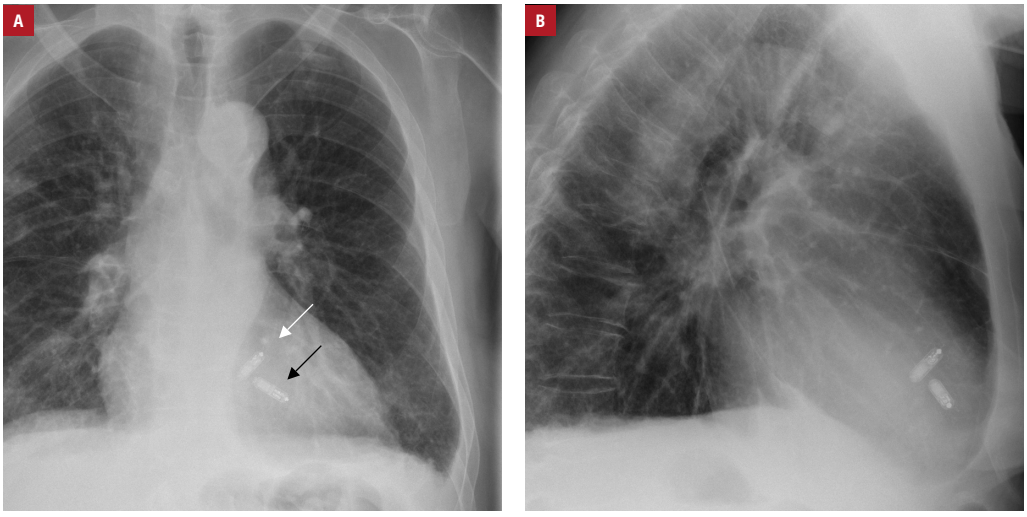

FIGURE 1 **A** – chest X-ray with the final position of the second Micra transcatheter pacing system (white arrow) and an older device (black arrow); **B** – chest X-ray: lateral view

The optimal Medtronic Micra transcatheter pacing system (Micra TPS) management in case of battery depletion has not been established yet. Although the Micra TPS is designed to be removable, the transvenous system retrieval was performed usually during several days or months after implantation and the longest indwelling period of the successfully removed Micra TPS was 4 years.[1,2] The longevity of the Micra TPS is estimated at 10 years in normal conditions. In patients with elevated pacing threshold, the longevity may be significantly limited and more and more Micras are expected to expire in the near future. For this reason, another device implantation will be a dominant solution in most of the cases. It is suggested that up to 3 Micra TPSs can be implanted to the right ventricle without compromising its function.[3] Untill now, only one case of double Micra TPS implantation in a human subject was published.[4]

We present the case of a 76-year-old man who was implanted with the Micra TPS in October 2017 due to permanent atrial fibrillation with complete atrioventricular block. Because of right subclavian vein thrombosis and arteriovenous fistula on the left side, a decision was made to implant a leadless pacemaker.

During the follow-up, successive increase of pacing threshold accompanied by 100% ventricular pacing resulted in early battery depletion. The patient was scheduled for the second Micra TPS implantation. The procedure was

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performed in December 2019 in regional anesthesia through the right femoral vein access according to the routine implantation protocol. Optimal electric parameters at high septal position were achieved (sensing, 16 mV; pacing threshold, 0.25 V at 0.24 ms; impedance, 800 Ω) after 3 device repositions in the low septal and apical region due to unacceptably high pacing threshold. Any interdevice interference was not observed. At the time of interrogation, both devices were accessible and the old device was turned off (Supplementary material, *Figure S1*).

While having the delivery catheter in place, it was attempted to remove the old device. A snare (7-mm, 3F Amplatz Goose Neck Microsnare Kit, Medtronic, Minneapolis, United States) was introduced through the lumen of the delivery catheter. It was possible to catch a knob of the old device but, despite firm traction with back-support of the steerable delivery catheter, the attempt was ineffective (Supplementary material, *Video S1*). Both Micra TPSs were left in place (FIGURE 1A and 1B). The procedure was uncomplicated.

The presented case highlights the fact that, although double or triple Micra TPS implantation is theoretically achievable, the electric parameters may exclude some potential locations. What is more, proximity of 2 units may pose a threat of interdevice interactions. In challenging cases, transesophageal echocardiography guidance may be considered.[5] The time of complete encapsulation of implanted device is unpredictable and after several years, the unit is usually irretrievable, so any attempt of extraction should be made with extreme caution.

SUPPLEMENTARY MATERIAL

Supplementary material is available at www.mp.pl/kardiologiapolska.

ARTICLE INFORMATION

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